

## Introduction

Surgical wound dehiscence in total ankle arthroplasty (TAA) re-visions can lead to an unplanned and extremely poor prognosis for patients undergoing this elective procedure.

Exposed TAA components are extremely susceptible to microbial surface contamination leading to ankle sepsis and osteomyelitis.<sup>1</sup> In these cases, patients commonly need to be treated with long term intravenous antibiotics, staged surgical intervention, and even require below knee amputations. Understanding the severity of this complication warrants research into a solution to heal these wounds rapidly and effectively. Acellular fish skin grafts contain omega-3 polyunsaturated fatty acids, which reduce inflammatory responses and advance cytokines to promote wound healing; a new form of these grafts is divided into tiny fragments (0.15 cm) that can mold into wound beds.<sup>2</sup> In this case study, we review the use of a fragmented acellular fish skin graft (FAFSG) in its ability to rapidly progress a surgical dehiscence to closure.

## Patient History

67 year old male with past medical history of hypertension, COPD and s/p Left total ankle arthroplasty secondary to end-stage ankle arthritis



Figure 1. Gutter Debridement, poly exchange, Achilles tendon lengthening

## Methodology & Procedures

A 74 year old male was taken to the operating room for a successful gutter debridement and replacement of the polyethylene spacer. Normal postoperative course was observed until the patients three week follow up where he was found to have a surgical dehiscence and exposed metallic hardware. Standard of care was provided for the wound until seventh postoperative week where he was taken to the operating room for a wide debridement with application of a FAFSG. Patient postoperatively had weekly visits where two in office debridement and one application of FAFSG was performed. Patient achieved full wound closure at 6 weeks without removal of hardware.

## Wound History

67 year old male with past medical history of hypertension, COPD and s/p Left total ankle arthroplasty secondary to end-stage ankle arthritis



Figure 2. Intra-operative debridement and application of fragmented acellular fish skin graft

## Discussion

Kerecis® Omega3 Wound graft (Kerecis), a new technology incorporating intact fish skin, is rich in omega-3 polyunsaturated fatty acids. Developed in 2009, the graft consists of skin from Icelandic cod. When one applies this modality to wound beds, the graft recruits the body's own cells and is ultimately turned into living tissue. The product itself acts as a bacterial barrier and promotes three-dimensional cellular ingrowth in comparison to human amnion grafts.<sup>3</sup> Acellular fish skin grafts contain omega-3 polyunsaturated fatty acids which enable wounds to transition from chronic into acute stages of healing.<sup>2</sup> The fragmented form of this graft can mold into wound beds which demonstrate efficacy when applied to complex wounds with exposed hardware. Further double-blinded, randomized controlled trials are recommended to determine the clinical effectiveness and utility of the Kerecis Omega3 Wound graft for wound healing in the setting of surgical wound dehiscence.



Figure 3a & 3b. 2 & 4 weeks s/p debridement and application of graft

## References

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